

What is claimed is:

1. An LED array exposure device comprising:

a plurality of light-emitting elements for exposing a photoconductor so as to form an image, the light-emitting element, so as to be compensated for variations, driven by a driving current obtained from a standard driving current common to the light-emitting elements through a process of incorporating a light quantity correction coefficient for compensating for variations of a light quantity emitted from the light-emitting element and a beam spot area correction coefficient for compensating for variations of a beam spot area formed on the photoconductor, the light-emitting element being so controlled as to be driven by the driving current for a length of time in accordance with a gray level of an image pixel to which the light-emitting element corresponds,

wherein the driving current for the light-emitting element is obtained from the standard driving current common to the light-emitting elements by incorporating the light quantity correction coefficient, the beam spot area correction coefficient, and further, a correction coefficient in accordance with a magnitude of a parameter that affects a granularity of the image.

2. An LED array exposure device as claimed in claim 1,

wherein the beam spot area correction coefficient is a value that corresponds to a magnitude of a difference between an average value obtained by averaging out beam spot areas of the plurality of light-emitting elements including the light-emitting element for which a correction is performed and the beam spot area of the light-emitting element for which a correction is performed.

3. An LED array exposure device as claimed in claim 2,
wherein the plurality of light-emitting elements are shifted along with the light-emitting element for which a correction is performed so that a moving average is obtained as the average value of beam spot areas.

4. An LED array exposure device as claimed in claim 2,
wherein the plurality of light-emitting elements comprise the light-emitting element for which a correction is performed and light-emitting elements immediately following thereto.

5. An LED array exposure device as claimed in claim 2,
wherein the LED array exposure device comprises a plurality of LED array chips, and the plurality of light-emitting elements comprise light-emitting elements within an identical LED array chip which includes the light-emitting element for which a correction is performed.

6. An LED array exposure device as claimed in claim 1,
wherein the parameter affecting the granularity of the image is a screen angle peculiar to an image pixel corresponding to the light-emitting element.

7. An LED array exposure device as claimed in claim 1,
wherein the parameter affecting the granularity of the image is a sensitivity of the photoconductor.

8. An LED array exposure device as claimed in claim 1,

wherein the parameter affecting the granularity of the image is a surface temperature of the photoconductor.

9. An LED array exposure device as claimed in claim 1,
wherein the parameter affecting the granularity of the image is a developing bias voltage applied to a developing apparatus.

10. An image forming apparatus comprising the LED array exposure device as set forth in claim 1.

11. An LED array exposure device comprising:
a plurality of light-emitting elements for exposing a photoconductor so as to form an image, the light-emitting element, so as to be compensated for variations, driven by a driving current obtained from a standard driving current common to the plurality of light-emitting elements through a process of incorporating a light quantity correction coefficient for compensating for variations of a light quantity emitted from the light-emitting element and a beam spot area correction coefficient for compensating for variations of an area of a beam spot formed on the photoconductor, the light-emitting element being so controlled as to be driven by the driving current for a length of time in accordance with a gray level of an image pixel to which the light-emitting element corresponds,

wherein, first, a driving current in a low gray level is obtained through a process of multiplying the standard driving current by a correction coefficient corresponding to a magnitude of a parameter affecting a granularity of the image when the image pixel has a low gray level, the beam spot area correction coefficient for the light-emitting element, and the

light quantity correction coefficient for the light-emitting element;

second, a driving current in a high gray level is obtained through a process of multiplying the standard driving current by a correction coefficient corresponding to a magnitude of a parameter affecting an granularity of the image when the image pixel has a high gray level, the beam spot area correction coefficient for the light-emitting element, and the light quantity correction coefficient for the light-emitting element; and

finally, the driving current for driving the light-emitting element is obtained by using linear interpolation from the driving current in the low gray level to the driving current in the high gray level in accordance with the gray level of the image pixel to which the light-emitting element corresponds.

12. An LED array exposure device as claimed in claim 11,

wherein the beam spot area correction coefficient is a value that corresponds to a magnitude of a difference between an average value obtained by averaging out beam spot areas of the plurality of light-emitting elements including the light-emitting element for which a correction is performed and the beam spot area of the light-emitting element for which a correction is performed.

13. An LED array exposure device as claimed in claim 12,

wherein the plurality of light-emitting elements are shifted along with the light-emitting element for which a correction is performed so that a moving average is obtained as the average value of beam spot areas.

14. An LED array exposure device as claimed in claim 12,

wherein the plurality of light-emitting elements comprise the light-emitting element for which a correction is performed and light-emitting elements immediately following thereto.

15. An LED array exposure device as claimed in claim 12,
wherein the LED array exposure device comprises a plurality of LED array chips, and the plurality of light-emitting elements comprise light-emitting elements within an identical LED array chip which includes the light-emitting element for which a correction is performed.

16. An LED array exposure device as claimed in claim 11,
wherein the parameter affecting the granularity of the image is a screen angle peculiar to an image pixel corresponding to the light-emitting element.

17. An LED array exposure device as claimed in claim 11,
wherein the parameter affecting the granularity of the image is a sensitivity of the photoconductor.

18. An LED array exposure device as claimed in claim 11,
wherein the parameter affecting the granularity of the image is a surface temperature of the photoconductor.

19. An LED array exposure device as claimed in claim 11,
wherein the parameter affecting the granularity of the image is a developing bias voltage applied to a developing apparatus.

20. An image forming apparatus comprising the LED array exposure device as set forth in claim 11.

21. A method of controlling an LED array exposure device comprising a plurality of light-emitting elements for exposing a photoconductor, including:

a first step of factoring a light quantity correction coefficient for correcting for a variation of a light quantity of a light-emitting element into a standard driving current common to the plurality of light-emitting elements;

a second step of factoring a beam spot area correction coefficient for correcting for a variation of an area of a beam spot formed on the photoconductor by the light-emitting element into a value obtained in the first step;

a third step of factoring a correction coefficient in accordance with a magnitude of a parameter that affects a granularity of the image formed on the photoconductor into a resultant value obtained in the second step; and

a fourth step of driving the light-emitting element by feeding an amount of current equivalent to the value obtained in the third step.

22. A method of controlling an LED array exposure device comprising a plurality of light-emitting elements for exposing a photoconductor, including:

a first step of obtaining a driving current in a low gray level through a process of multiplying a standard driving current common to the plurality of light-emitting elements by
a) a light quantity correction coefficient for correcting for a variation of a light quantity of a light-emitting element, b) a beam spot area correction coefficient for correcting for a variation

of an area of a beam spot formed on the photoconductor by the light-emitting element, and c) a correction coefficient corresponding to a magnitude of a parameter affecting a granularity of an image when a image pixel corresponding to the light-emitting element has a low gray level;

a second step of obtaining a driving current in a high gray level through a process of multiplying the standard driving current common to the plurality of light-emitting elements by a) the light quantity correction coefficient for correcting for a variation of a light quantity of the light-emitting element, b) the beam spot area correction coefficient for correcting for a variation of an area of a beam spot formed on the photoconductor by the light-emitting element, and c) a correction coefficient corresponding to a magnitude of a parameter affecting a granularity of an image when the image pixel corresponding to the light-emitting element has a high gray level; and

a third step of obtaining a driving current by which the light-emitting element is driven by using linear interpolation from the driving current in the low gray level to the driving current in the high gray level in accordance with a gray level of the image pixel to which the light-emitting element corresponds.